

In the claims:

For the Examiner's convenience, all pending claims are presented below with changes shown in accordance with the mandatory amendment format. Please cancel claims 1 and 12-21 without prejudice.

1. (Cancelled)
2. (Currently Amended) An apparatus as claimed in claim 11 ~~1~~, further comprising at least one waveguide disposed on said silicon substrate wherein light may be coupled between said microresonator and said waveguide.
3. (Currently Amended) An apparatus as claimed in claim 11 ~~1~~, wherein the annular structure is a ring.
4. (Currently Amended) An apparatus as claimed in claim 11 ~~1~~, wherein the annular structure is a ring having a length from a center of the ring to a center of a waveguide that forms the ring being proportional to an integer multiple of a desired wavelength.
5. (Currently Amended) An apparatus as claimed in claim 11 ~~1~~, wherein the annular structure is a disk.
6. (Currently Amended) An apparatus as claimed in claim 11 ~~1~~, wherein the annular structure is a disk having a perimeter being an integer multiple of a wavelength.
7. (Currently Amended) ~~An apparatus as claimed in claim 1, wherein said microresonator includes~~ An apparatus, comprising:

a silicon substrate; and

a microresonator disposed on said silicon substrate, said microresonator having an annular structure to recirculate light at a desired wavelength, and including silicon or silicon-germanium nanocrystals in at least one of silicon dioxide, silicon nitride, and alumino-silicate

8. (Currently Amended) An apparatus as claimed in claim 11 ~~4~~, wherein said microresonator includes a rare earth.

9. (Currently Amended) An apparatus as claimed in claim 11 ~~4~~, wherein said microresonator includes at least one of erbium and ytterbium.

10. (Currently Amended) An apparatus as claimed in claim 11 ~~4~~, further comprising a pump to excite circulation of light in said microresonator.

11. (Currently Amended) ~~An apparatus as claimed in claim 1, further comprising~~ An apparatus, comprising:

a silicon substrate;

a microresonator disposed on said silicon substrate, said microresonator having an annular structure to recirculate light at a desired wavelength; and

a pump to excite circulation of light in said microresonator,~~the pump~~ and to tunnel current through silicon dioxide to form electron-hole pairs in the silicon or silicon-germanium nanocrystals in the silicon dioxide.

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Currently Amended) An apparatus as claimed in claim 24 ~~21~~, wherein a distance between said waveguide and said microresonator is equal to or less than 250 nanometers.

23. (Currently Amended) An apparatus as claimed in claim 24 ~~21~~, further comprising a pump disposed above said microresonator to excite recirculation of light in said microresonator.

24. (Currently Amended) ~~An apparatus as claimed in claim 21, wherein said microresonator is comprises~~ An apparatus, comprising:

a silicon substrate;

a microresonator disposed on said silicon substrate, said microresonator being comprised of silicon or silicon-germanium nanocrystals and having an annular structure to recirculate light at a desired wavelength; and

a waveguide disposed above said microresonator to couple light between said microresonator and said waveguide.

25. (New) An apparatus as claimed in claim 24, wherein the annular structure is a ring.
26. (New) An apparatus as claimed in claim 24, wherein the annular structure is a ring having a length from a center of the ring to a center of a waveguide that forms the ring being proportional to an integer multiple of a desired wavelength.
27. (New) An apparatus as claimed in claim 24, wherein the annular structure is a disk.
28. (New) An apparatus as claimed in claim 24, wherein the annular structure is a disk having a perimeter being an integer multiple of a wavelength.
29. (New) An apparatus as claimed in claim 24, wherein said microresonator includes a rare earth.
30. (New) An apparatus as claimed in claim 24, wherein said microresonator includes at least one of erbium and ytterbium.
31. (New) An apparatus as claimed in claim 24, further comprising a pump to excite circulation of light in said microresonator and to tunnel current through silicon dioxide to form electron-hole pairs in the silicon or silicon-germanium nanocrystals in the silicon dioxide.